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EXAMINER	
JACKSON, BLANE J	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/815,884	JACOBS ET AL.	
	Examiner	Art Unit	
	Blane J. Jackson	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-42 have been considered but are moot in view of the new ground(s) of rejection. Bates et al. (US 5,561,004) is introduced to teach a thin film lithium battery comprising an electrolyte layer constructed of LiPON deposited on a flexible substrate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5-8, 9, 11, 12, 16-20, 22, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle et al. (US 6,078,791) in view of Bates et al. (US 5,561,004).

As to claims 1 and 11, Tuttle teaches a method and apparatus for a combined battery and wireless communications system comprising:

A flexible support structure (figure 2, support layer (30) a RFID device bonded to a rigid or flexible thin film support, column 3, lines 39-43 and column 4, lines 5-13),

A thin film battery *mounted to the substrate* (figure 2, batteries (38) and (40), column 7, lines 31-44 and figure 4B, column 21-26),

An antenna mounted to the support structure (figure 2, dipole antenna, conductive strips (34) and (36), column 7, lines 31-38),

An electronic communications circuit mounted to the support structure and electrically coupled to the battery and the antenna to transceiver radio communications (figure 1A is the functional block diagram and figures 4A-4D, transceiver IC (32) bonded to the support structure, column 8, lines 12-20).

Tuttle teaches thin-film batteries (column 4, lines 14-19) bonded with epoxy to the support structure (column 8, lines 21-26) but does not teach a first conductive layer deposited on the support structure and a thin film battery deposited as successive thin film depositions over at least a portion of the first conductive layer wherein the electrolyte layer includes LiPON.

Bates teaches a thin film lithium battery deposited in a predetermined fashion on a glass, alumina, various semiconductor or polymer (flexible) support structure, figure 1, column 1, line 58 to column 2, line 34. Bates teaches two current collector films (32 and 34) are deposited upon the substrate (22) to enable electrical power to be withdrawn from the battery (20), figure 1, column 2, lines 5-10. Bates further discloses successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer, a solid-state electrolyte layer and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer wherein the electrolyte layer includes LiPON, figure 1, column 2, lines 5-26.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the thin film battery bonded to the supporting structure in the application of Tuttle as alternatively fabricated and comprising materials as taught by Bates to create a packaged system which includes a battery fabricated or built onto a flexible or rigid substrate.

As to claims 2 and 12 with respect to claims 1 and 11, Bates of Tuttle modified teaches wherein the anode or the cathode or both include an intercalation material or a metal or both (figure 1, the anode (28) and anode (24) are the metal lithium).

As to claims 5 and 16 with respect to claim 1 and 11, Tuttle teaches the assembly includes a rigid or flexible thin film support member to support integrated circuits, antenna and thin film batteries disposed thereon (figure 2, column 4, lines 5-21) where the flexible support member would inherently bend to match a curved shape.

As to claims 6-8 and 17-19 with respect to claims 1 and 11, Tuttle teaches the antenna is within the integrated circuit, or position adjacent to the IC on the thin support member, column 4, lines 5-14, in the form of a dipole or loop antenna typically screen printed on the upper surface of the base support layer, column 7, line 31-38 and column 6, lines 35-50. Tuttle further teaches the outer surfaces of two batteries may also serve as a bow tie antenna, column 10, lines 25-36 where this alternative battery/ antenna structure teaches a plurality methods to selectively position and deposit or screen ink

the conductive pattern of the antenna consistent with the packaging design and manufacturing method.

As to claims 9 and 20 with respect to claims 1 and 11, Tuttle teaches wherein the electronic circuit includes a recharging circuit that recharges the battery using energy received by the antenna (figure 9, the "battery" being a charge on capacitor (148) is maintained by conventional RF charging circuits on IC (150), energized from a remote source through the antenna, such as an electronic device configured as a radio frequency identification (RFID) transceiver, column 10, lines 37-48).

As to claims 22 and 26, Tuttle teaches an integrated combined battery and wireless communication device comprising:

A flexible support structure (figure 2, support layer (30) a RFID device bonded to a rigid or flexible thin film support, column 3, lines 39-43 and column 4, lines 5-13),

A thin film battery bonded to the substrate (figure 2, batteries (38) and (40), column 9, lines 11-14),

An electronic communications circuit including an antenna mounted to the support structure and including a recharging circuit, the recharging circuit electrically coupled to the battery and the energy receiving device to recharge the battery using energy received by the energy receiving device (figure 9, communications circuit including an antenna (154 and 156) and a recharging circuit that recharges the battery using energy received by the antenna, the "battery" being a charge on capacitor (148) is

maintained by conventional RF charging circuits on IC (150), energized from a remote source through the antenna, such as an electronic device configured as a radio frequency identification (RFID) transceiver, column 10, lines 37-48).

Tuttle teaches a thin-film batteries (column 4, lines 14-19), which are bonded to the support structure (column 8, lines 21-26) but does not teach a first conductive layer deposited on the support structure and a thin film battery deposited as successive thin film depositions over at least a portion of the first conductive layer, wherein the electrolyte layer includes LiPON.

Bates teaches a thin film lithium battery deposited in a predetermined fashion on a glass, alumina, various semiconductor or polymer (flexible) support structure, figure 1, column 1, line 58 to column 2, line 34. Bates teaches two current collector films (32 and 34) are deposited upon the substrate (22) to enable electrical power to be withdrawn from the battery (20), figure 1, column 2, lines 5-10. Bates further discloses successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer, a solid-state electrolyte layer and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer wherein the electrolyte layer includes LiPON, figure 1, column 2, lines 5-26.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the thin film battery bonded to the supporting structure in the application of Tuttle as alternatively fabricated and comprising materials as taught by

Bates to create a packaged system which includes a battery fabricated or built onto a flexible or rigid substrate.

Tuttle further teaches an energy receiving device mounted to the support structure in the form of a loop antenna (152) for receiving RF charging signals for capacitor (148), figure 9, column 10, lines 37-55. Tuttle further teaches a passive device wherein a capacitor is periodically charged from a remote source via the loop antenna and conventional RF charging circuits on the IC (150), column 10, lines 49-55. Since Tuttle teaches a wireless recharging apparatus and a battery supported system, it would have been obvious to one of ordinary skill in the art at the time of the invention to further realize the passive charging system of Tuttle may be used to charge the batteries of Tutttle modified to prolong device operation.

As to claim 23 with respect to claim 22, Bates of Tuttle modified teaches the apparatus according to claim 22 wherein the anode or the cathode or both include an intercalation material or a metal or both (figure 1, the anode (28) and anode (24) are the metal lithium).

Claims 10, 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle et al. (US 6,078,791) and Bates et al. (US 5,561,004) and further in view of Little (US 4,740,431).

As to claims 10, 21 and 25 with respect to claims 1, 11 and 22, Tuttle teaches a RFID device comprising a battery positioned on a rigid or flexible thin film support

member, column 5, line 65 to column 6, line 14, but does not teaches a photovoltaic cell including a recharging circuit that recharges the battery.

Little teaches an integrated thin film photovoltaic or solar cell and battery with supporting circuits for the solar cell to charge the battery, figures 1-3, column 5, lines 18-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the RFID device of Tuttle modified to include the photovoltaic cell and charge circuits of Little to provide long term activation of the RFID device.

Claims 3, 4, 13-15, 24, 34-39 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle et al. (US 6,078,791) and Bates (US 5,561,004) and further in view of Bates (US 5,569,520).

As to claim 3, Tuttle teaches a method and apparatus for a combined battery and wireless communications system comprising:

A flexible support structure (figure 2, support layer (30) a RFID device bonded to a rigid or flexible thin film support, column 3, lines 39-43 and column 4, lines 5-13),

A thin film battery *mounted to the substrate* (figure 2, batteries (38) and (40), column 7, lines 31-44 and figure 4B, column 21-26),

An antenna mounted to the support structure (figure 2, dipole antenna, conductive strips (34) and (36), column 7, lines 31-38),

An electronic communications circuit mounted to the support structure and electrically coupled to the battery and the antenna to transceiver radio communications

(figure 1A is the functional block diagram and figures 4A-4D, transceiver IC (32) bonded to the support structure, column 8, lines 12-20).

Tuttle teaches thin-film batteries (column 4, lines 14-19) bonded with epoxy to the support structure (column 8, lines 21-26) but does not teach a first conductive layer deposited on the support structure and a thin film battery deposited as successive thin film depositions over at least a portion of the first conductive layer wherein the electrolyte layer includes LiPON.

Bates teaches a thin film lithium battery deposited in a predetermined fashion on a glass, alumina, various semiconductor or polymer (flexible) support structure, figure 1, column 1, line 58 to column 2, line 34. Bates teaches two current collector films (32 and 34) are deposited upon the substrate (22) to enable electrical power to be withdrawn from the battery (20), figure 1, column 2, lines 5-10. Bates further discloses successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer, a solid-state electrolyte layer and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer wherein the electrolyte layer includes LiPON, figure 1, column 2, lines 5-26.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the thin film battery bonded to the supporting structure in the application of Tuttle as alternatively fabricated and comprising materials as taught by

Bates to create a packaged system which includes a battery fabricated or built onto a flexible or rigid substrate.

Bates of Tuttle modified teaches a lithium anode, a lithium cathode and a LiPON electrolyte film but is silent as to the cathode layer comprises a lithium intercalation material.

Bates '520 teaches one or a stack of rechargeable lithium battery comprising a substrate, then successive deposited layers of metal cathode current collector, a cathode layer comprising a lithium intercalation material or lithium cobalt oxide, an electrolyte layer comprising LIPON and an anode film comprised of lithium, column 5, lines 7-30, column 3, line 11 to column 4, line 10. Bates '520 further teaches a multi-cell battery suitable for applications requiring moderate amounts of power, column 7, lines 23-27.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the deposited layer materials of Tuttle modified with the lithium compounds as taught by Bates to form a rechargeable thin film battery capable of providing moderate amounts of power suitable for cellular telephones, laptop computers, hearing aids and cardiac pacemakers.

As to claims 4, 13-15, 24 and 34-39 with respect to claims 1, 11, 22 and 33,

Bates of Tuttle modified teaches a lithium anode, a lithium cathode and a LiPON electrolyte film but is silent as to the cathode layer comprises a lithium intercalation material.

Bates '520 teaches one or a stack of rechargeable lithium battery comprising a substrate, then successive deposited layers of metal cathode current collector, a cathode layer comprising a lithium intercalation material or lithium cobalt oxide, an electrolyte layer comprising LIPON and an anode film comprised of the metal lithium, column 5, lines 7-30, column 3, line 11 to column 4, line 10. Bates '520 further teaches a multi-cell battery suitable for applications requiring moderate amounts of power, column 7, lines 23-27.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the deposited layer materials of Tuttle modified with the lithium compounds as taught by Bates to form a rechargeable thin film battery capable of providing moderate amounts of power suitable for cellular telephones, laptop computers, hearing aids and cardiac pacemakers.

As to claim 42 with respect to claim 1, Tuttle modified teaches a battery formed by disposition techniques but does not teach the electrolyte layer has a thickness of less than 1000 Angstroms.

Bates '520 teaches a thin film battery where the thickness of the cathode film is about 1 um, the thickness of the electrolyte film is about 1 um, column 5, lines 6-23.

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the thickness of the electrolyte film of Tuttle modified is less than 1000 Angstroms as suggested by Bates '520 to employ the characteristics of a thin-film battery used to satisfy power requirements.

Claims 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuttle et al. (US 6,078,791) and Bates et al. (US 5,561,004) and further in view of Lew et al. (US 6,608,464).

As to claims 27 and 29 with respect to claim 22, Tuttle modified teaches an energy receiving device, column 10, lines 37-48 but does not teach the energy receiving device comprises an electromechanical electric generator or magnetic transducer.

Lew teaches an integrated power source layered with thin film rechargeable batteries, charger and charge controller where selection of the source of current delivered to the battery is under the control of an auto select charging unit (figure 10, column 7, lines 7-50). The three current sources are a Solar Cells (88), RF/ Microwave Induction Charger and Miniature Generator (94), figure 3d, inductive charging: column 5, line 62 to column 6, line 4.

It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the energy source of Tuttle modified to include the alternatives of Lew to ensure recharging of the batteries.

As to claims 28 and 30 with respect to claim 22, Tuttle modified does not teach the energy receiving device comprises an acoustic transducer.

Lew teaches the selection of three sources to source the circuits and charge the battery (figure 10) but does not teach the energy receiving device comprises an acoustic transducer. However, since Lew teaches the idea of a variety of sources, it

would have been obvious to one of ordinary skill in the art at the time of the invention to apply any other suitable power source to Tuttle modified to ensure the device has available power to operate.

Claims 31, 32 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bates et al. (US 5,561,004) in view of Little (US 4,740,431) and Bates (US 5,569,520) hereafter Bates '520.

As to claims 31, Bates teaches a rechargeable battery comprising:

A support structure (figure 1, column 2, lines 5-15, substrate underlying the battery comprised of glass, alumina, various semiconductor or polymer materials),

A first conductive layer deposited on a first surface area of the support structure (figure 1, column 2, lines 5-15, two current collector films (32 and 34) deposited upon the substrate (22)),

A thin-film battery deposited as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer, a solid-state electrolyte layer and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer wherein the electrolyte layer includes LiPON (figure 1, column 2, lines 5-26, electrolyte (26) is LiPON),

Bates does not teach a wireless energy-receiving device and an electronic hearing aid mounted to the support structure and including a recharging circuit, the

recharging circuit electrically coupled to the battery and the energy-receiving device to recharge the battery using energy received by the energy-receiving device.

Little teaches an integrated solar cell and battery made by employing thin film deposition techniques on a substrate for application with emergency lights, radio transceivers, portable computers, watches and calculators, figures 1 and 2, column 2, lines 35-54. Little discloses the integrated solar cell and battery includes a load (44) and rectifying circuit to charge the battery in light and prevent discharging through the solar cell when the solar cell and battery is in the dark, column 5, lines 1-29.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the thin-film battery of Bates applied to the integrated wirelessly recharging electronic device of Little as a better rechargeable lithium thin-film battery and to simplify the manufacture and construction of portable photovoltaic power devices.

Bates modified teaches an integrated rechargeable battery and wirelessly recharging electronic devices but is silent as to an electronic hearing aid.

Bates '520' teaches a multi-cell lithium thin-film battery suitable for applications that include cellular telephones, computers, hearing aids and cardiac pacemakers, figure 1, column 3, lines 10-62 and column 7, lines 24-28.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the integrated combined rechargeable battery and wirelessly recharging apparatus of Bates modified as suggested by Bates '520 as alternative applications.

As to claim 32 with respect to claim 31, Bates '520 of Bates modified teaches the apparatus operates as an implantable medical device (column 7, lines 24-28, a cardiac pacemaker).

As to claim 40, Little of Bates modified teaches the apparatus according to claim 31 wherein the energy-receiving device comprises a photovoltaic cell (figure 1, column 4, lines 6-30, solar cell).

Claims 33 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bates et al. (US 5,561,004) in view of Little (US 4,740,431).

As to claim 33, Bates teaches a rechargeable battery comprising:

A support structure (figure 1, column 2, lines 5-15, substrate underlying the battery comprised of glass, alumina, various semiconductor or polymer materials),

A first conductive layer deposited on a first surface area of the support structure (figure 1, column 2, lines 5-15, two current collector films (32 and 34) deposited upon the substrate (22)),

A thin-film battery deposited as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer, a solid-state electrolyte layer and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer

wherein the electrolyte layer includes LiPON (figure 1, column 2, lines 5-26, electrolyte (26) is LiPON),

Bates does not teach a wireless energy-receiving device and electronic timepiece mounted to the support structure and including a recharging circuit, the recharging circuit electrically coupled to the battery and the energy-receiving device to recharge the battery using energy received by the energy-receiving device.

Little teaches an integrated solar cell and battery made by employing thin film deposition techniques on a substrate for application with emergency lights, radio transceivers, portable computers, watches and calculators, figures 1 and 2, column 2, lines 35-54. Little discloses the integrated solar cell and battery includes a load (44) and rectifying circuit to charge the battery in light and prevent discharging through the solar cell when the solar cell and battery is in the dark, column 5, lines 1-29.

It would have been obvious to one of ordinary skill in the art at the time of the invention to realize the thin-film battery of Bates applied to the integrated wirelessly recharging electronic device of Little as a better rechargeable lithium thin-film battery and to simplify the manufacture and construction of portable photovoltaic power devices.

As to claim 41, Little of Bates modified teaches the apparatus according to claim 33 wherein the energy-receiving device comprises a photovoltaic cell (figure 1, column 4, lines 6-30, solar cell).

Conclusion

The prior art made of record and not relied upon but considered pertinent to applicant's disclosure includes Bates et al. (US 5,338,625).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Thursday, 7:30 AM-6:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.